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	Title	Comment	Comment made by	Assigned To	Response
1	Vehicle Plan	Concerned that with the layout of the cars, there is still enough room for the heavy truck traffic	Bill Miller	C. James	
2	Communication	It is important to keep separate communication lines. Sounds like the existing mine system may work	Bill Miller	J. Kilmer, J. Voirin & C. James	The existing system is for emergency use only and is demonstratibly NOT adequate for shaft crane operations. A plan is in progress to install a communication system specifically for shaft operations, for use when using the shaft crane and also when using a truck crane for the transfer cart and the magnet coils.
3	Use of Collaborators	If six collaborators are needed all the time, remember there will be training time and coming up to speed. It is best if you can remain stable if possible. Get people signed up for long term commitments	Bill Miller	J. Thron	
4	Daily Information Meeting	Very important that everyone is on the same page. Need to insure that the lead workers on iron workers at meetingas well. 15 minutes each morning will save lotsw of time in the long run.	Bill Miller	J. Voirin	We always planned on having a daily meeting as stated in Leon's, Delmar's and my own presentation
5	If Second Shift Needed	At Soudan, we ran 2 shifts. Important to overlap lead manager to second shift. I see this used mainly for staging materials if shaft access is a problem.	Bill Miller	J. Voirin & C. James	A second shift is not planned for, aside from a need to speed up the overall installation due to a severe delay in the date of Beneficial Occupancy. And if a second shift is required then of course there will be an increase in personnel to cover it. However, unlike the Far Detector, the second shift would be identical in operations to the first shift, and would require less "handoff" time between shifts. There is no staging of materials underground (the Far Det staged materials on one shift and used those materials to assemble and install planes ona second shift) - detector planes cannot be placed horizontally on the floor underground using the plane transfer "mini-strongback". Planes coming underground must be placed directly onto the Detector. All the steps to assemble materials into a Plane have already been performed before a Plane comes underground.

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6	Conflict with Forklift	Appears likely that the tugger will be needed to insure no conflict in movement of planes. Must be somewhere to store it out of the way. The tugger is useful for moving dead forklift.	Bill Miller		There will be 75% of the 60ft-long detector missing when we will have the potential for this conflict. The 4ft x 7ft footprint of the TeV tugger is negligable compared to this. Also, the Near Hall is 150ft long, and even when the Detector is complete, there is about 75 feet of enclosure remaining under crane coverage (due to a physics requirement to have a given amount of "clear space" between where the neutrino beam exits the rock and the front face of the Detector). As it turns out, we will likely use an available electric forklift instead of the TeV tugger, and it has an even slightly smaller footprint.
7	Battery Change and Charging	Changing battery everyday sounds like a pain! Time consuming. Insure safety equipment is in place	Bill Miller	C. James	For safety aspects, see response to #24. All options to an electric vehicle have been examined (and re-examined) - in spite of battery changes, this is the best choice. There are other battery forktrucks on-site, and the technical staff is familiar with battery changing operations.
8	Procedures: major materials handling	Need to do full scale test of major materials handling procedures. Mainly, the plane lowering and transfer task. I would do full test with MT strongback before the first plane. Then bring down single sheet without scintillator. This should be watched by a safety committee.	Bill Miller	J. Voirin	We plan on bringing in a strongback and outfitting it with the guide wheels. The guide-wheels, which were briefly mentioned during the presentation, are designed to roll along the elevator wall in the shaft and prevent the strongback from having any rotation while being lowered. We will take an empty strongback down and up the shaft, primarily to test the guide-wheels and fine-tune the procedures for positioning a strongback for lowering down the shaft. The guide wheels are the most outboard items. Doing an additional test, in bringing down a blank sheet of steel on a strongback will not tell us anything we did not learn using an empty strongback. Transfer operations using planes with scintillator have already been practiced using each of the 4 plane types (partial and full, U and V).

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9	Welding Fumes	At Soudan, we used portable fume suckers. They keep fumes down a lot. They are effective and easy to use	Bill Miller	J. Kilmer	We have portable fume suckers also and will use them as required. At present we have only two jobs of welding scheduled for the experimental hall and both are done using the TIG process which produces no fumes. The first is putting the Stainless steel spacer bars on the rails. The second is welding together the aluminum corner joints on the magnet. All of the welding for the planes will be done in the New Muon Lab before the planes are delivered to the hall.
10	Looks Like Things are well thought out	Basically looks in good shape. Excellent job!	Bill Miller	J. Kilmer	
11	Foam For Absorber Blocks	It was suggested that compressible foam might be used to seal cracksin the Absorber pile, presumably for the purpose of minimizing the flow of radioactivated air. Such material, if used must sbe sufficiently radiation hard to survive in this environment for the duration of the experiment. If it crumbles into radioactive dust, it will do more harm than good.	Dave Boehnlein	D. Miller	.
12	Vehicle Plan for Near Hall	Determine what vehicles (manlifts, forklifts, etc.) are needed for detector installation. Who will provide them? Who will maintain them? Also, determine where they are parked when not in use. This is important given the space constraints in the near hall. There must be room to bring in planes past them.	Dave Boehnlein	J. Voirin	Delmar and I each have lifts available. It is normal procedure for us then to take care of the equipment under our control. There will be plenty of room for them. They are needed for installation. Time spent familiarizing oneself with the hall dimensions would be helpful.
13	Integration of Lab Surveyors in Scheduloe	Lab survey crews will be needed to set up coordinate systems and benchmarks, and to spot check during and after installation. Detector plane survey will use vulcan system operated by installation crew. But surveyors must set up benchmarks for vulcan. While survey needs during assembly of Absorber may be minimal, they are probably not zero (e.g. is structure plumb, also survey of hadron and muon monitor chambers) All use of lab surveyor crews should be integrated into installation schedule	David ayres	C. James & J. Voirin	

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14	Protection of Detector PMT's from Helium	The Helium gas used for Hadron and Muonn monitor cfhambers can seriously damage near detector PMT's. Although the two should never come into contact in normal operations, great care should be taken to preventg exposure of PMT's to Helium during installation and during extraordinaty equipment failures (e.g. broken supply line).	David ayres	C. James & J. Voirin	
15	Sump Pump Monitoring and Failure Response	1) Plan for 24/7monitoring of sump pumps is good but need to establish procedures for rapid (~30 minutes) reponse to failures. Experts must be available on very short notice. 2) Electrical extension cords must be kept off the floor to avoid electrocution hazard in event of flood.	David ayres	E. McCluskey	
16	Shaft Occupation	Signal (such as a light) downstairs to alert of a load in the shaft.	John Voirin	C. James & E. McCluskey	I believe there exist a light that is on when the shaft is occupied. We should see that it stays or is replaced if removed.
17	Schedule Development	Another pass of schedule needs to be presented within one (1) month. Lots of points identified but not done. As one presentor stated, its "conversational" at this point	Rob Plunkett	C. James & J. Thron	
18	Crane Procedures	Elaborate the crane operation protocol. Need to understand the handoffs at the bottom of the shaft, particularly for detector planes. Current plan seems to be confused. Also, don't know who are the crane operators.	Rob Plunkett		
19	Gas System Installation	Develop an installation plan for gas systems for monitoring. Currently looks very preliminary.	Rob Plunkett	D. Harris	

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20	Decay Pipe Cleaning	With the upstream end going in the decay pipe before beneficial occupancy of the downstream end, there appears to be no time to schedule cleaning of the decay pipe. Rust has likely formed during this summer. Exactly what cleaning is meeded should be determined and a time scheduled to do it. This may require changing the time on upstream end installation and/or obtaining RBI permission for downstream access.	Wes Smart	D. Pushka	
21	Absorber Planning Details	Careful detailed plans need to be made for several areas of absorber installation: 1) mounting, changing, surveying hadron monitor, 2) installation of upstream top absorber shielding blocks, and 3) absorber entry labyrinth.	Wes Smart	C. James & D. Miller	All plans are carefully thought out. On these topics: 1) the shielding has been modified to provide a Hadron Monitor access "port" whereby the Monitor can be accessed without the removal of any shielding blocks, however it is noted that changing out the Hadron Monitor is an operation outside the scope of the NuMI Project; 2) the topmost concrete shield blocks cannot be lifted into place using the forktruck as the truck is now specified, however there is adequate space to place them using the gantry provided by the rigging contractor - there is about 24" of space between the lowest point of the ceiling and the top of the upper block; 3) the Task Manager does not view the Labyrinth installation as being significantly different from similar beamline enclosure areas - we are looking into having a contractor "fill in" the walls and ceiling so that they are flat, leaving far smaller cracks than the current passage would leave.

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22	Plane Transfer Cart/Tugger Test	The loading and unloading plans on the transfer cart testing has been performed, but I did not hear that any practice run was performed with moving the loaded cart with the tugger that will be used for the move from the shaft area to the MINOS Hall. Since the path is not a straight one, a similar configuration of turns should be tested. If this testing has not been performed, then it should be done as soon as possible in order to assure that the tugger and cart will perform as planned, and if not, that there is sufficient time to re-plan.	Dean Hoffer	J. Voirin	The details were necessarily brushed over during the review, due to time considerations. The cart has been moved around New Muon building many times and has been brought into the building from outside 4-5 times - it's storage location is behind the building. Turning the cart to bring it into the building is a far tighter curve than the one in the underground tunnel access. The familiarity of movement is more casual than the size of the cart might imply. It is like moving a big wagon. The wheels can be locked into a position aligned with the cart, or left free to rotate for steering. This allows for the "steering side" to be easily swapped from one end of the cart to the other, as the situation demands.
23	Coordination Readiness Review Prior to Occupancy	After listening to the three Installation Plan prenentationsm I get the feeling that the coodination between the installations of the service Building floor space, etc. has been discussed, but not really nailed down. I realize that coordination will get more firmed up as we get closer to occupancy, but I would recommend that a readiness review is performed a month prior to obtaining occupancy to assure that activities between the different installations are coordinated, will documented, and well understood by all parties involved. The short time it takes to do athe readiness review can save a lot of time during installation if something was missed.	Dean Hoffer	M. Mascione, J. Voirin & L. Beverly	Mike Mascione and John Voirin have had ongoing discussions. They have worked together for years and are familiar and confident of themselves and each other. All the materials handling has been practiced, other than putting the actual items on the building floor. Scale models have been examined and used for discussions. Of course we will talk again, and again, before we commence this operation.

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24	Readiness for Hazardous Activities and Accidents	Assure that all potentiol hazardous material accidents have been identified, emergency plans generated and in place, equipment required, mitigating or cleanup of accidents are in place and personnel trained in the procedures and with the equipment. This comment was initiated by the presentation on the use of a lift truck that has lead acid batteries with a charging station and that there are spares that are available to be changed out in the lift truck. When the presenter was asked if there are procerudes in place for the proper and safe process to change the batteries, I was told they have the vendors recommended procedure and that the procedure that will be generated will at least meet the vendors. My concern is that procedures and proper equipment for these types of hazardous activities are to be done and not yet done. I believe there needs to be a readiness review prior to occupancy to assure everything is in place and ready	Dean Hoffer	D. Miller & J. Voirin	ES&H manual has a section for this, and it has been in existence for many years. The FNAL technical staff is familiar with the requirements and will follow all the necessary requirements when setting up the charging station and writing procedures for battery changes.